

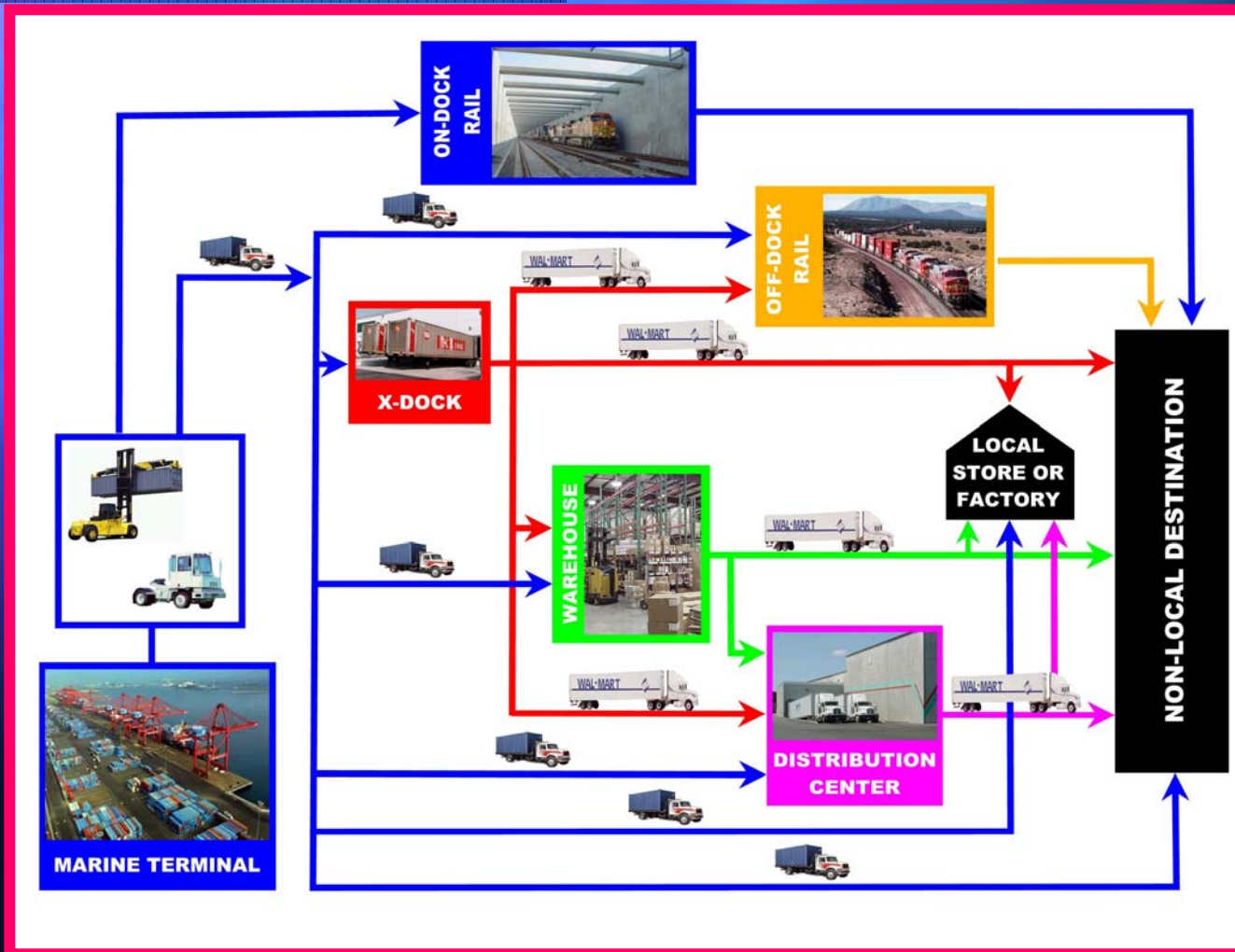
Port Programs Related to Air Quality Improvement

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Trade and Goods Movement



Sources and Challenges



Target Pollutants: NO_x & PM

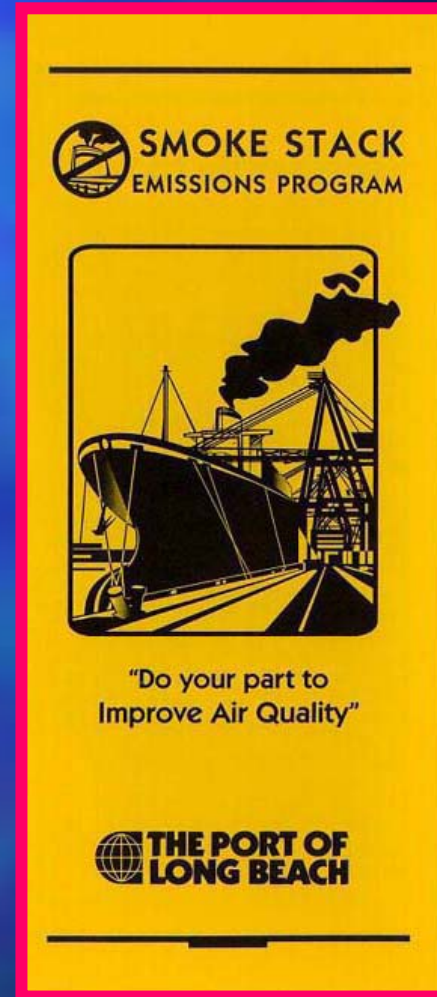
- NO_x – Nitrogen Oxides: An ozone precursor that significantly contributes to smog.
- Particulate Matter: PM₁₀ Microscopic particles that includes soot from diesel exhaust. Toxic air contaminant.
- The South Coast Air basin exceeds Federal Air Quality Standards for both ozone and particulate matter.

Maritime Goods Movement sources

Vessels

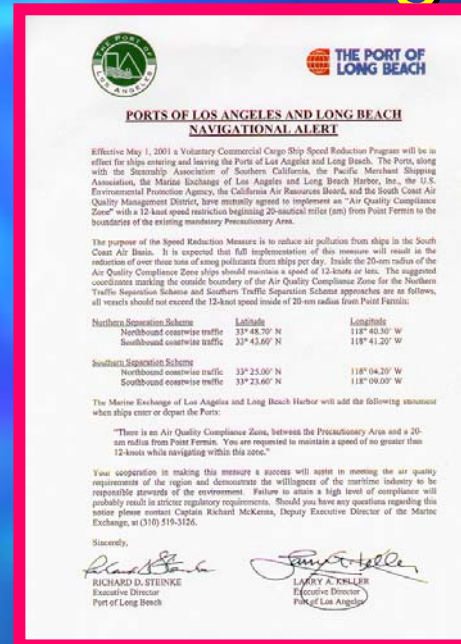
Smoke Stack Emission Reduction Program

- Particulates from smoke stack blows when engine started up
- Complaints/Damage from fallout
- Education/Outreach to vessel masters
- Training security personnel and AQMD reporting



Vessel Speed Reduction Program

- Goal reduce NOx from transiting vessels
- Voluntary-MOU with Ports, Regulatory, MAREX, PMSA, SASC
- Currently ~50% participation
- ~1 ton/day current reduction



Vessel Retrofit Demonstration Project

- Retrofit demonstration project on existing vessel
- Maritime Working Group-CARB, EPA, Ports, Vessel operator
- Goal-NOx and PM reduction
- Fuel emulsification prior to injection



POLB Shoreside Electrical Power

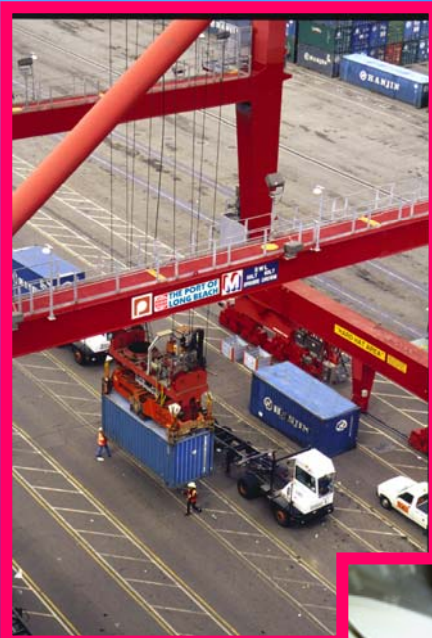
- Voluntary program with BP/POLB
- POLB make shore side improvements
- BP to retrofit at least two vessels
- Minimum of 120 calls over 10 years
- BP responsible for all Operational costs
- Future terminal projects will require cold ironing through the lease



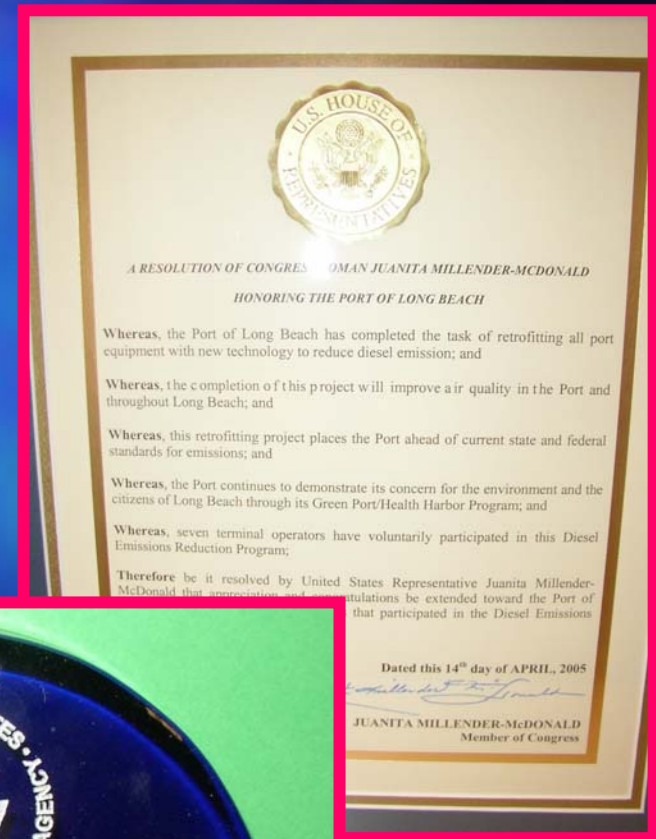
Maritime Goods Movement sources

Terminal and Landside
Equipment

Retrofit of Tenant's Diesel Equipment & use of Alternative Fuel



Awards



Other Terminal Related Measures

- Container cranes electrified
- Many LPG forklifts
- O₂ Diesel being used in selected pieces of equipment
- Electric dredges or dredges using emulsified diesel
- ULSD in construction equipment

Maritime Goods Movement sources

On Road Vehicles

Port Owned Equipment

- Port owned and operated equipment limited
- "Practice what we preach"
- Use fleet vehicles with alternative fuels
- CNG & hybrid Security cars
- Vacuum & LPG street sweepers
- O₂ Diesel for heavy duty equipment



Gateway Cities Fleet Modernization Program

- POLB and Cities teamed up
- Incentives average \$25,000 per truck
- Owner pays about one third of total truck cost
- Old truck engine and chassis are permanently destroyed
- Trucker saves about \$1700 per year in fuel costs
- Typical replacement truck emits about 50% less NOx and 85% less PM



Maritime Goods Movement sources

Locomotives

Locomotive Fleet Upgrade

- PHL operates locomotives in Ports
- New Agreement will replace all old locomotives with much cleaner Tier II engines
- Includes Green Goat (hybrid) and LNG engines as part of fleet
- Future engine purchases equal to/or cleaner (e.g. Tier III)
- Run emulsified diesel and DOCs



Important Miscellaneous Air Related Efforts

- Emissions inventory of Port sources
- Requirement for all construction equipment to use ultra low sulphur diesel
- Grade separations (including Alameda Corridor) eliminate idling and reduce emissions
- On-dock railyard eliminates drayage trips
- LNG Demonstration project
- Ratify Marpol Annex VI

Future Efforts

- Create incentives to “cold iron” vessels
- Improve participation in the vessel speed reduction program
- Develop strategies to reduce Port truck trips
- Infrastructure/Efficiency Strategies
- SECA Designation Support
- Lease Strategies (e.g. fleet turnover/alt fuels)

